

## CENTENNIAL CHALLENGES UPDATE - July 2006

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### ===== CENTENNIAL CHALLENGES BREAKING NEWS =====

#### LUNAR LANDER CHALLENGE ANNOUNCED

NASA's Deputy Administrator Shana Dale announced the Centennial Challenges program has signed an agreement with the X PRIZE Foundation to conduct the Lunar Lander Challenge. Dale made the announcement at the National Space Society International Space Development conference (NSS ISDC) in Los Angeles on May 5, 2006. The challenge will take place at the X PRIZE Cup Expo in Las Cruces, New Mexico, October 20-21.

The Lunar Lander Challenge is designed to accelerate technology developments supporting the commercial creation of a vehicle capable of ferrying cargo or humans back and forth between lunar orbit and the lunar surface. Such a vehicle would have direct application to NASA's space exploration goals as well as the personal spaceflight industry. Additionally, the prize will help industry build new vehicles and develop the operational capacity to operate quick turnaround vertical take-off, vertical landing vehicles, which will be of significant use to many facets of the commercial launch procurement market.

NASA's contribution of \$2 million to the Lunar Lander Challenge purse is the largest Centennial Challenge prize offered to date. The Challenge is divided into levels one and two. To win prize money in either level, a rocket-propelled vehicle with an assigned payload must take-off vertically, climb to a defined altitude, fly for a pre-determined amount of time, then land vertically on a target that is a fixed distance from the take-off point. After remaining at this location for a period of time, the vehicle must take-off, fly for the same amount of time, and land again on its original launch pad. The primary difference between the two levels will be in the time of flight, the surface terrain at the landing sites, and the corresponding degree of difficulty presented for precision landing and servicing of the vehicles.

More details regarding the announcement can be found at

centennial challenges.nasa.gov and regarding the XPF at [www.xprize.org](http://www.xprize.org).

===== CENTENNIAL CHALLENGES IN THE NEWS =====

Hartford Courant article: The Hartford Courant attended the Astronaut Glove Challenge Workshop and reported on the event on April 25, 2006.

The article includes interviews with potential competitors.

The article "Mission: Design Better Gloves" can be read or downloaded off the web at the [pqasb.pqarchiver.com/courant/advancedsearch.html](http://pqasb.pqarchiver.com/courant/advancedsearch.html) by searching in the archives for 'astronaut glove.'

===== CLASSIC CENTENNIAL CHALLENGES HIGHLIGHTS =====

2006-2007 Astronaut Glove Challenge Workshop

NASA Astronaut Carl Walz presented his "first hand" experience with space suits and gloves at the Astronaut Glove Competition 2006 Workshop, April 24, 2006, at the New England Air Museum, Windsor Locks, Connecticut. The workshop was held by Volanz Aerospace, Inc., the Allied Organization that is administering and executing the Challenge for NASA.

Walz and other space suit experts spoke to an audience that included prospective competitors about space suit and glove technology and the competition planned for April, 2007.

Experts from Hamilton Sundstrand, ILC Dover, NASA Headquarters and academia discussed the state-of-the-art in glove technology, and gave a glove box demonstration and safety briefing. In addition, the current Challenge rules and team agreement were discussed and audience comments received. Information from the workshop is available on: [www.astronaut-glove.us](http://www.astronaut-glove.us).

Centennial Challenges Mini-Workshops

Centennial Challenges program staff held three Mini-Workshop sessions to seek public input and ideas at two conferences, the National Space Society's International Space Development Conference (NSS ISDC) on May 5 and the American Institute of Aeronautics and Astronautics' International Energy Conversion Exhibit and Conference on June 27. The mini-workshop sessions focused on individual topics, including Environmental Control and Life Support Systems, Space Science, and Power and Energy Systems. Each mini-workshop session was well attended and many new ideas for future competition were identified by participants. These ideas will be added to the Centennial Challenges database of potential competitions and evaluated as the program continues to evolve.

Centennial Challenges and Allied Organization Panel

Also at the NSS ISDC, NASA led a panel including five Centennial Challenges Allied Organization representatives. This was the largest public gathering of such organizational leaders since the inception of the Centennial Challenges Program. A large audience heard a program overview and an overview of the nine Challenges that have been announced to date.

===== SPECIAL ANNOUNCEMENTS =====

The Centennial Challenges website, [centennialchallenges.nasa.gov](http://centennialchallenges.nasa.gov) has been reorganized and updated. Visit the site to see a current schedule of competitions and appearances. The website will include additional program background information and results in the future.

Copies of past versions of past newsletters are now available from the Centennial Challenges web site in PDF format. Click on "Archives" in the navigation bar to the left of the home page and look under "Documents/Presentations".

===== CENTENNIAL CHALLENGES NOTES =====

- The California Space Education & Workforce Institute (CSEWI) has received more than 161 "Notice of Interest" web-form submittals as of April 30 for the Regolith Excavation Challenge, to be held May 12, 2007.

- The Spaceward Foundation Challenges have received the following interest as of the end of April, 2006:  
+ 2006 Beam Power: registered 20 teams and received 50 Notices of Interest  
+ 2006 Tether: three notices of Interest

===== LINKS TO COMPETITIONS =====

Visit the Centennial Challenges and the following websites for up-to-date status on the Challenges:

2006 Beam Power Challenge

- Challenge date: Oct. 20-21, 2006
- Location: X PRIZE Cup event, Las Cruces, NM
- Allied Organization: Spaceward Foundation
- Total Purses: \$200k
- Challenge home page:  
[www.elevator2010.org/site/competitionClimber2006.html](http://www.elevator2010.org/site/competitionClimber2006.html)
- Rules:  
[www.elevator2010.org/site/documents/climber\\_rulebook\\_2006.current.pdf](http://www.elevator2010.org/site/documents/climber_rulebook_2006.current.pdf)
- Registration: [www.elevator2010.org/site/competitionClimber2006.html](http://www.elevator2010.org/site/competitionClimber2006.html)

2006 Tether Challenge

- Challenge date: Oct. 20-21, 2006
- Location: X PRIZE Cup event, Las Cruces, NM
- Allied Organization: Spaceward Foundation
- Total Purses: \$200k
- Challenge home page:  
[www.elevator2010.org/site/competitionTether2006.html](http://www.elevator2010.org/site/competitionTether2006.html)
- Rules:  
[www.elevator2010.org/site/documents/tether\\_rulebook\\_2006.current.pdf](http://www.elevator2010.org/site/documents/tether_rulebook_2006.current.pdf)
- Registration: [www.elevator2010.org/site/competitionTether2006.html](http://www.elevator2010.org/site/competitionTether2006.html)

2006 Lunar Lander Challenge

- Challenge date: Oct. 20-21, 2006
- Location: X PRIZE Cup Expo, Las Cruces, New Mexico
- Allied Organization: X PRIZE Foundation
- Total Purses: \$2M
- Challenge home page, rules:  
[www.xprizefoundation.com/news/LunarLanding.asp](http://www.xprizefoundation.com/news/LunarLanding.asp)
- Registration: Contact the X PRIZE Foundation, William

Pomerantz, (301)395-5283, will@xpri ze.org

#### 2007 Astronaut Glo ve Challenge

- Challenge date: April 2007
- Location: To be determined
- Allied Organization: Volanz Aerospace
- Total Purses: \$250k
- Challenge home page: [www.astronaut-glove.us](http://www.astronaut-glove.us)
- Rules: <http://astronaut-glove.tripod.com/rules.pdf> and <http://astronaut-glove.tripod.com/rules.doc>
- Registration: [www.astronaut-glove.us](http://www.astronaut-glove.us) (see Team Agreement)

#### 2007 Regolith Excavation Challenge

- Challenge date: May 12, 2007
- Location: Santa Maria Fair Park, Santa Maria, California
- Allied Organization: California Space Education & Workforce Institute (CSEWI)
- Total Purses: \$250k
- Challenge home page: [www.californiaspaceauthority.org/regolith](http://www.californiaspaceauthority.org/regolith)
- Rules: [www.californiaspaceauthority.org/regolith/regolith-rules.pdf](http://www.californiaspaceauthority.org/regolith/regolith-rules.pdf)
- Registration: [www.californiaspaceauthority.org/regolith/team-registration.html](http://www.californiaspaceauthority.org/regolith/team-registration.html)

#### 2007 Personal Air Vehicle (PAV) Challenge

- Challenge date: Mid-2007
- Location: Santa Rosa, California
- Allied Organization: Comparative Aircraft Flight Efficiency Foundation
- Total Purses: \$250k
- Challenge home page: [www.cafefoundation.org/v1/pav.htm](http://www.cafefoundation.org/v1/pav.htm)
- Rules: [www.cafefoundation.org/v1/documents/TeamAgreement.pdf](http://www.cafefoundation.org/v1/documents/TeamAgreement.pdf)
- Registration: to be announced

#### 2007 Telerobotic Construction Challenge

- Challenge date: October, 2007
- Location: Mountain View, California
- Allied Organization: Spaceward Foundation
- Total Purses: \$50k
- Challenge home page: [www.spaceward.org](http://www.spaceward.org), to be announced.
- Rules: to be announced
- Registration: to be announced

#### 2008 Planetary Unmanned Aerial Vehicle (PUAV) Challenge

- Challenge date: May, 2008
- Location: California
- Allied Organization: California Space Education & Workforce Institute (CSEWI)
- Total Purses: \$250k
- Challenge home page: [www.californiaspaceauthority.org/html/level-one/institute.html](http://www.californiaspaceauthority.org/html/level-one/institute.html), to be announced
- Rules: to be announced
- Registration: to be announced

#### 2008 MoonROx (Moon Regolith Oxygen) Challenge

- Challenge date: expires June 1, 2008
- Location: First to Demonstrate - dependent on team
- Allied Organization: Florida Space Research Institute
- Total Purses: \$250k
- Challenge home page: [www.MoonROx.org](http://www.MoonROx.org)
- Rules: [www.fsri.org/Grant%20Process%20Chart/MoonROx%20Rules.pdf](http://www.fsri.org/Grant%20Process%20Chart/MoonROx%20Rules.pdf)
- Registration: [www.fsri.org/space\\_research\\_Moon\\_ROx.htm#Compete](http://www.fsri.org/space_research_Moon_ROx.htm#Compete)

#### 2008 Telerobotic Construction Challenge

- Challenge date: October 2008
- Location: Mountain View, California
- Allied Organization: Spaceward Foundation
- Total Purses: \$200k
- Challenge home page: [www.spaceward.org](http://www.spaceward.org), to be announced.
- Rules: to be announced
- Registration: to be announced

#### ===== FUTURE PUBLIC APPEARANCES =====

- July 9-12, 2006 - Centennial Challenges panel participation at AIAA Joint Propulsion Conference in Sacramento, CA.
- July 21, 2006 - Centennial Challenges mini-workshop at the Space Frontier Foundation NewSpace 2006 Conference, Las Vegas, NV.
- July 28, 2006 - Centennial Challenge participation in NASA Personal Air Vehicle Forums at the Experimental Aircraft Association (EAA) AirVenture Oshkosh 2006, Oshkosh, WI
- September 20, 2006 - Centennial Challenges panel participation at AIAA 2006 Space Conference in San Jose, CA.
- October 20-21, 2006 - Beam Power, Tether, and Lunar Lander Challenges at the X PRIZE Cup in Las Cruces, NM.